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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,312	07/22/2003	Frank Liu	17973	7281

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EXAMINER	
TRAN, KHAI	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 11/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/624,312	LIU, FRANK	
	Examiner	Art Unit	
	KHAI TRAN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,7,10,11,16-19,25 and 26* is/are rejected.

7)☒ Claim(s) *4,6,8,9,12-15,20-24,27-34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/27/04; 4/27/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 5, 7, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vanderaar et al. (1997) cited by Applicant in view of Hurley (U.S. Pat. 7,039,130).

Regarding claim 1, Vanderaar et al disclose a method for processing an electromagnetic wave comprising the steps of: receiving rectangular coordinate information for the electromagnetic wave; directly converting the rectangular coordinate information into a magnitude signal, using a Coordinate Rotation digital Computer (CORDIC) algorithm, where Φ represents phase of the electromagnetic wave (see 3.1 showing a Cartesian to polar CORDIC processor wherein the I and Q data are transformed into magnitude (r) and phase (Φ), page 1221, left site). Vanderaar et al fail to explicitly disclose the step of converting rectangular information into a sin(Φ), and a cos(Φ) signal using a CORDIC.

Hurley discloses that the CORDIC algorithm is a time and space efficient algorithm for calculating sine and cosine values of a given angle. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was

made to convert rectangular information into a sin(Φ), and a cos(Φ) signal using a CORDIC as taught by Hurley into the teachings of Vanderaar et al in order to perform a rotation of the phase of the electromagnetic wave.

Regarding claims 2-3, Vanderaar et al disclose the step of direct converting being accomplished using shift and add/subtract operations and a look-up table (see page 1220 with a look up table (LUT), and page 1221 shows that the coordinate transform are realized with CORDIC processor that uses adders/subtractors and fixed shifts, and see Figure 6).

Regarding claim 5, Vanderaar et al disclose wherein the step of direct converting is accomplished using at least two cascaded processors employing the CORDIC algorithm (see Figure 6, there are two cascaded processors L1-Stage CORDIC and L2-Stage CORDIC).

Regarding claim 7, Vanderaar et al disclose wherein the step of direct converting is accomplished using shift and add/subtract operation only (see 1222, left side, from "The complexity of the CORDIC ... for the PC-CORDIC.).

Claims 10-11 are similar to claims 1 and 7. Therefore, claims 10-11 are rejected under a similar rationale.

Claim Rejections - 35 USC § 103

3. Claims 16-19, 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vanderaar et al. (1997) cited by Applicant in view of Hurley (U.S. Pat. 7,039,130) as applied to claims 1-3, 5, 7, 10-11 above, and further in view of Hietala (U.S. Pat. 6,834,084).

Claim 16 is similar to claim 1 except receiving steps of receiving quadrature information that represents the input wave when combined; and regulating the modified signal using the magnitude signal to generate an output signal. Vanderaar et al disclose step of receiving quadrature information that represents the input wave when combined (Figure 6 showing I and Q information is inputted into the CORDIC processor). Vanderaar et al and Hurley fail to explicitly disclose a step of regulating the modified signal using the magnitude signal to generate an output signal.

Hietala disclose a direct digital polar modulator comprising a power amplifier for receiving an amplitude processing path and a frequency processing path in order to generate an output signal for transmitting the output signal by a transmitter 26 (see col. 3, line 1 to col. 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to regulate the modified signal using the magnitude signal to generate an out put signal as taught Hietala into the teachings of Vanderaar et al and Hurley in order to align or increase the power signal prior to transmitting the signal.

Claims 17-19 are similar to claims 2, 5, 7. Therefore, claims 17-19 are rejected under a similar rationale.

Claim 25 is similar to claim 16. Therefore, claim 25 is rejected under a similar rationale.

Claim 26 is similar to claim 19. Therefore, claim 26 is rejected under a similar rationale.

Allowable Subject Matter

4. Claims 4, 6, 8, 9, 12-15, 20-24, 27-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: Vanderaar et al, Hurley, Hietala fail to disclose the magnitude, the sin(Φ), and the cos(Φ) signals are generated in accordance with the equations as recited in claims 4, 6, 9, 13, 14, 15, 28, 29, 30; and wherein the step of direct converting includes a preprocessing stage that maps the rectangular coordinate information to right hand plane of a coordinate map to avoid an plane ambiguity to the shift and add/subtract operations.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dennis et al (US 2004/0247040 A1) disclose an electromagnetic wave transmitter system, methods and articles of manufacture.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KHAI TRAN
Primary Examiner
Art Unit 2611

KT
November 2, 2006